REMARKS

Upon entry of this amendment, which amends Claims 1, 13, 14, 17 and 20, and adds Claims 35-49, Claims 1, 13-17, 19-24, 29, 31-49 remain pending. In the July 11, 2003 Office Action, Claims 17 and 20 were rejected under 35 U.S.C. § 112, Second Paragraph, as being indefinite. Claims 1, 13-17, 19-23, 29 and 31-33 were rejected under 35 U.S.C. § 102(b), as being anticipated by U.S. Patent No. 5,414,894 to Bisaro et al. (hereinafter referred to as "Bisaro et al."). Finally, Claims 24 and 34 were rejected under 35 U.S.C. § 103(a), as being unpatentable over Bisaro et al. in view of U.S. Patent No. 3,742,318 to Yamashita (hereinafter referred to as "Yamashita"). Applicant respectfully requests reconsideration of the claims in view of the above amendments and the comments below.

35 U.S.C. § 112, Second Paragraph, Rejections – Claims 17 and 20

In the Office Action, Claims 17 and 20 were rejected under 35 U.S.C. § 112, Second Paragraph, as being indefinite. While Applicant does not necessarily agree with the grounds for these rejections, amendments to Claims 17 and 20 have been made, which Applicant believes remove any indefiniteness issues relating to these claims. Applicant respectfully requests, therefore, that the § 112 rejection of Claims 17 and 20 be withdrawn.

35 U.S.C. § 102(b) Rejections – Claims 1, 13-17, 19-23, 29 and 31-33

In the Office Action, Claims 1, 13-17, 19-23, 29 and 31-33 were rejected under 35 U.S.C. § 102(b), as being anticipated by Bisaro et al. For the following reasons, Applicant respectfully disagrees.

Independent Claim 1 of the present application includes a "joining means" element, which is recited to be comprised of "a layer of microcavities". As explained in a prior March 24, 2003 Amendment and Response, Bisaro et al. do *not* disclose a joining means having *microcavities*. Rather, Bisaro et al. teach the creation, by implantation, of *perturbation zones* at an *atomic scale*. These perturbation zones, as explained, for example, in lines 14-20, column 2 of Bisaro et al., can take on three different forms: (1) anchoring points (corresponding to vacancies, repelled atoms of the crystal, punctual defects of the crystalline lattice due to implantation); (2) zones of stresses (for example induced by the insertion, in the crystalline lattice, of an atom with a big size such as Ar); or (3) an amorphous zone of the material corresponding to a rupture of the crystalline order. These perturbation zones may prove useful to trap or absorb dislocations. However, they are *not* microcavities, as that term is meant in the present application.

The meaning of the term "microcavities" is discussed at length in the present application. In particular, beginning at line 31 on page 6 of the application, it is explained that:

> "It is also known, for example through document FR-A-2 681 472, that implantation by bombardment of a rare gas or hydrogen in a semiconductor

material, or in a solid material whether crystalline or not (cf. FR-A-2 748 850) is able to create microcavities or platelets at a depth close to the average depth of penetration of the implanted species. The morphology (size, shape...) of these defects may change during heat treatments, in particular these cavities may, according to the conditions of heat treatment, induce surface deformations called 'blisters'. The most important parameters that need to be controlled in order to obtain such deforming are the dose of gas inserted during implantation, the depth at which the gas species are implanted and the heat schedule applied during implantation. By way of example, an implantation of hydrogen in a silicon wafer at a dose of 3.10^{16} H^+/cm^2, for an energy of 40 keV, crates a continuous embedded layer of microcavities that is approximately 150 nm thick, at an average depth of 330 nm. By continuous layer is meant a layer containing microcavities distributed in homogeneous manner over a certain thickness. These microcavities are of elongated shape (hence the name 'platelets'). Their size is for example in the order of 6 nm in length and two atomic planes in thickness. If heat treatment is applied at 700°C for 30 minutes, the microcavities magnify and their size may increase for example from 6 nm to over 50 nm in length and by a few atomic planes at 4-6 nm in thickness. On the other hand, no disturbance of the implanted surface is noted. Cavity size and the pressure within these cavities are not sufficient to induce surface deformation. This provides a continuous layer of embedded defects with a zone containing microcracks (or microcavities or platelets) bit with no surface deterioration.

The presence of microcavities is also seen in the case of implantation made by helium bombardment at the average depth of implantation Rp in a substrate, for example, silicon. In this case, the cavities obtained are present even at annealing temperatures in the order of 1000°C. These defects cause strong, deep weaknesses in the material."

Page 6, line 31 through page 8, line 9 of present patent application.

Unlike Bisaro et al., the presently claimed invention is a *macroscopic* approach aimed at creating a layer of defects (e.g. microcavities or roughness at a bonding interface) of sufficient size to allow the physical decoupling of the substrate and epitaxial layer to be grown on the thin layer and thereby render the induced stresses less important. Contrary to the assertions made in the Office Action, implantation does not necessarily always lead to the formation of microcavities. Indeed, in Bisaro et al. it does not.

Bisaro et al. discuss implantation using Ar ions. Considering the weak implantation dose disclosed and the large size of the implanted Ar ions, one of ordinary skill in the art would readily understand that neither platelets nor microcavities can be performed using such implant conditions.

For at least the foregoing reasons Bisaro et al. do not teach a compliant substrate having a "joining means" comprised of "a layer of microcavities". Applicant respectfully requests, therefore, that the § 102 rejection of independent Claim 1 be withdrawn.

The other rejected claims all depend from independent Claim 1. Accordingly, as independent Claim 1 appears to be allowable over Bisaro et al., the dependent claims should also be allowable as depending from an allowable base claim. Applicant respectfully requests, therefore, that the § 102 rejections of the rejected dependent claims also be withdrawn.

35 U.S.C. § 103(a) Rejections – Claims 24 and 34

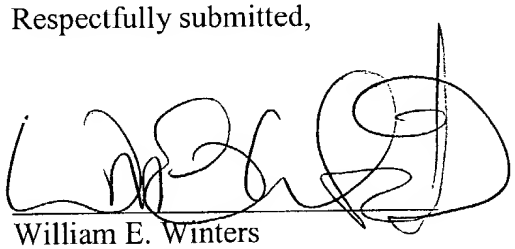
In the Office Action, claims 24 and 34 were rejected under 35 U.S.C. § 103(a), as being unpatentable over Bisaro et al. in view of Yamashita. Claims 24 and 34 both depend from independent Claim 1, which as explained above, is believed to be allowable over the prior art of record. The addition of Yamashita does nothing to alter this fact. Accordingly, Claims 24 and 34 are believed to be also allowable over the prior art of record, and Applicant respectfully requests that the § 103 rejections of these claims be withdrawn.

CONCLUSION

In view of the foregoing, Applicant believes all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 408-282-1857.

Respectfully submitted,



Dated: March 4, 2004

William E. Winters
Reg. No. 42,232

THELEN REID & PRIEST LLP
P.O. Box 640640
San Jose, CA 95164-0640
(408) 282-1857 Telephone
(408) 287-8040 Facsimile